

CLAIMS

1. A data and voice digital communication network installation providing a backbone communication bandwidth solely through addressed digital logic packets of at least 2.5 gigabytes/second between geographically substantially dispersed locations being primary hubs, and having at least one light transmitting fibre through which the transmission is effected with means at respective ends, being the primary hubs, of the fibre to effect an input and output of the communication signals at a rate which is at least the said bandwidth, and further having at least one intermediate means being a secondary hub which is substantially geographically dispersed from said locations of the primary hubs to effect an input and output through addressed digital logic packets into the fibre, and means to then effect transmission of and signals from said secondary hub to a further geographically dispersed location at a rate which is less than the said bandwidth between said primary hubs.
2. A data and voice digital communication network installation including a plurality of packet communication networking hubs, logically configured in a hierarchy of at least two tiers, a transmission backbone network linking said hubs, including at least one light transmitting fibre with means to extract signals from and apply signals to the fibre which are at least a proportion of end to end signals being carried by the fibre, said signals being extracted to and received from the packet communications networking hubs, at a plurality of selected locations, including at least one which is not located at a primary hub, wherein the logical configuration of a given hub is substantially independent of its physical connectivity to the transmission backbone network.
3. A data and voice digital communication network installation as in claim 2, wherein a logical connectivity scheme is constructed and is operated so that it provides a first logical connectivity mesh linking each of a plurality of hubs comprising a first hierarchical tier of hubs, at least one second connectivity mesh linking each of a plurality of hubs comprising a second hierarchical tier of hubs to at least two hubs of said first tier.

- 5 4. A data and voice digital communication network installation as in claim 3, wherein said logical connectivity scheme further includes point to point connectivity between each of a plurality of hubs comprising a third hierarchical tier of hubs and at least one hub from a higher hierarchical tier and point to point connectivity between any hub and selected locations external to the communication network scheme.
- 10 5. A method of operating a data and voice digital communication network including a plurality of packet communication networking hubs, logically configured in a hierarchy of at least two tiers, a transmission backbone network linking said hubs, including at least one light transmitting fibre, extracting signals from and applying signals to the fibre which are at least a proportion of end to end signals being carried by the fibre, said signals being extracted to and received from the packet communications networking hubs, at a plurality of selected locations, including at least one which is not
- 15 located at a primary hub, wherein the logical configuration of a given hub is substantially independent of its physical connectivity to the transmission backbone network.
- 20 6. A data and voice digital communication network as in claim 5, further including the construction and operation of a logical connectivity scheme including a first logical connectivity mesh linking each of a plurality of hubs comprising a first hierarchical tier of hubs, at least one second connectivity mesh linking each of a plurality of hubs comprising a second hierarchical tier of hubs to at least two hubs of said first tier.
- 25 7. A data and voice digital communication network as in claim 6, wherein said logical connectivity scheme further includes point to point connectivity between each of a plurality of hubs comprising a third hierarchical tier of hubs and at least one hub from a higher hierarchical tier and point to point connectivity between any hub and selected locations external to the communication network scheme.
- 30 8. A data and voice digital communication network installed in Australia providing for at least one communication network between Sydney and Melbourne which provides for a bandwidth of at least approximately 2.5 gigabits per second and has at least one intermediate node where the communication method is solely directed toward addressed digital packet

transmission where both the digital and voice communication over such a backbone connection is by way of such addressed digital logic packets.

- 5 9. A data and voice digital communication network installation covering the geography of Australia providing a backbone communication bandwidth solely through addressed digital logic packets of at least 2.5 gigabytes/second between geographically substantially dispersed locations being primary hubs, and having at least one light transmitting fibre through which the transmission is effected with means at respective ends, being the primary hubs, of the fibre to effect an input and output of the communication signals at a rate which is at least the said bandwidth, and
10 further having at least one intermediate means being a secondary hub which is substantially geographically dispersed from said locations of the primary hubs to effect an input and output through addressed digital logic packets into the fibre, and means to then effect transmission of and signals from said
15 secondary hub to a further geographically dispersed location at a rate which is less than the said bandwidth between said primary hubs.
- 20 10. A data and voice digital communication network substantially as described with respect to any one of the embodiments in the specification with reference to and as illustrated by the accompanying illustrations with respect to that embodiment.